Sustainable AI: AI for sustainability and the sustainability of AI

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Abstract

While there is a growing effort towards AI for Sustainability (e.g. towards the sustainable development goals) it is time to move beyond that and to address the sustainability of developing and using AI systems. In this paper I propose a definition of Sustainable AI; Sustainable AI is a movement to foster change in the entire lifecycle of AI products (i.e. idea generation, training, re-tuning, implementation, governance) towards greater ecological integrity and social justice. As such, Sustainable AI is focused on more than AI applications; rather, it addresses the whole sociotechnical system of AI. I have suggested here that Sustainable AI is not about how to sustain the development of AI per say but it is about how to develop AI that is compatible with sustaining environmental resources for current and future generations; economic models for societies; and societal values that are fundamental to a given society. I have articulated that the phrase Sustainable AI be understood as having two branches; AI for sustainability and sustainability of AI (e.g. reduction of carbon emissions and computing power). I propose that Sustainable AI take sustainable development at the core of its definition with three accompanying tensions between AI innovation and equitable resource distribution; inter and intra-generational justice; and, between environment, society, and economy. This paper is not meant to engage with each of the three pillars of sustainability (i.e. social, economic, environment), and as such the pillars of sustainable AI. Rather, this paper is meant to inspire the reader, the policy maker, the AI ethicist, the AI developer to connect with the environment—to remember that there are environmental costs to AI. Further, to direct funding towards sustainable methods of AI.